

CLAIMS

1. (Currently amended) Apparatus for converting between analogue and digital signals comprising:

a continuous-time sigma-delta conversion means modulator;

clock pulse generator apparatus comprising a clock pulse generator for generating a train of return-to zero primary clock pulses each having leading and trailing edges defining alternately an active clock phase and a non-active clock phase;

a delay means module for producing a train of delayed clock pulses presenting delayed edges whose timing relative to corresponding edges of said primary clock pulses is defined by said delay means module, and

~~combing means~~ a combiner for producing a train of combined clock pulses presenting leading and trailing edges defined alternately by one of said delayed edges and the corresponding edge of the primary clock pulse, so that the active clock phases of said combined clock pulses have widths defined by said delay means module, the variability of said widths of said active clock phases being smaller than the variability of the positions of said leading and trailing edges of said primary clock pulses, and the widths of said non-active clock phases varying as a function of variation in the positions of said primary clock pulses;

said continuous-time sigma-delta modulator being connected to utilize said train of combined clock pulses as clock.

2. (Currently amended) Apparatus for converting between analogue and digital signals as claimed in claim 1 wherein said delay means module comprises at least a first series of cascaded, substantially identical delay element elements for producing said train of delayed clock pulses with a delay defined by said first series of delay elements.
3. (Currently amended) Apparatus for converting between analogue and digital signals as claimed in claim 2 wherein said delay means module comprises a further series

of cascaded delay elements which are substantially identical to the first said delay elements of said first series for producing a further train of delayed clock pulses with a delay defined by said further series of delay elements, an adjustment means element responsive to the said delay of said further series train of delayed clock pulses series relative to a ~~pulse period~~ of said train of primary clock pulses for applying an adjustment signal to tend to correct the delay of said further train of delayed clock pulses series ~~of delay elements relative to a pulse period~~, said adjustment signal being averaged over a plurality of clock periods, and ~~means for~~ applying said adjustment signal being arranged to adjust the delay ~~of the delay elements of~~ defined by said first series of delay elements.

4. (Currently amended) Apparatus for converting between analogue and digital signals as claimed in claim 2 wherein each of said delay elements comprises a respective capacitive element, a current supply means responsive to an signal input to the delay element for supplying a controlled current to said respective capacitive element, and trigger means responsive to the voltage at said respective capacitive element.
5. (Currently amended) Apparatus for converting between analogue and digital signals as claimed in claim 1, wherein said continuous-time sigma-delta ~~conversion means~~ modulator comprises an integrator ~~integration means~~ for integrating a signal over periods of time defined by said widths of said active clock phases.
6. (Currently amended) Apparatus for converting between analogue and digital signals as claimed in claim 5, wherein said continuous-time sigma-delta ~~conversion means~~ modulator comprises a digital-to-analogue converter means module whose operation is responsive to said train of combined clock pulses.
7. (Currently amended) Apparatus for converting an analogue signal to a digital signal as claimed in claim 6, wherein said continuous-time sigma-delta ~~conversion means~~ modulator comprises an input for receiving said analogue signal, an output for said digital signal and a feedback loop from said output including said digital-to-analogue converter means module.

8. (Currently amended) Apparatus for converting a digital signal to an analogue signal as claimed in claim 6, wherein said continuous-time sigma-delta ~~conversion means~~ modulator comprises an input for receiving said digital signal and an output for said analogue signal, said digital-to-analogue ~~converter means~~ module being in series between said input and said output.